Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A method for performing failure analysis on a semiconductor device under inspection, comprising:

preparing of a sample of the semiconductor device under inspection using an encapsulation material containing a dye, the prepared device sample possibly including at least one failure area containing wicked in encapsulation material containing the dye;

sectioning the prepared device sample to facilitate viewing a cross section face of the device under inspection; ~~and~~

performing a dark field analysis on the prepared device sample with the use of dark field illumination, wherein responsive to at least one failure area containing wicked in encapsulation material with dye occurring on the cross section face of the device under inspection, the failure area can be readily identified as well as a contrast and perspective of remaining portions of the cross section face being maintained; and

repeating the sectioning of the prepared device sample to facilitate viewing another cross-section face of the device under inspection, and performing dark field analysis on the another cross section face of the prepared device sample with the use of dark field illumination.

2. (original) The method of claim 1, wherein the semiconductor device includes a wafer level chip scale packaged semiconductor device.

3. (original) The method of claim 1, wherein the dye includes at least one fluorescent dye selected from the group consisting of a Xanthane, Naphthalimide, Perylene, Courmarin, and Fluorescein based family.

4. (original) The method of claim 1, wherein the dye includes a dye pigment that is added to an uncured epoxy encapsulation material.

5. (original) The method of claim 4, wherein preparing the device sample further includes placing the sample into a container along with the uncured epoxy containing the dye pigment, placing the same in a vacuum chamber, and maintaining the same under vacuum within the vacuum chamber for a duration of time sufficient for allowing the uncured epoxy encapsulation material containing dye to wick into a failure area of delamination extending from an exterior to an interior of the device sample.

6. (original) The method of claim 5, further including configuring the conditions within the vacuum chamber to promote wicking of the encapsulation material containing dye into the failure area.

7. (original) The method of claim 5, wherein preparing the device sample further includes employing a vacuum purge cycle subsequent to placing the device sample under vacuum within the vacuum chamber for the duration of wicking, allowing the dye and encapsulation material to return to standard ambient conditions, and then curing the encapsulation material containing the dye.

8. (original) The method of claim 4, further wherein the encapsulation material includes a two component encapsulant comprised of a resin and a hardener.

9. (original) The method of claim 1, wherein sectioning of the sample includes rough grinding, followed by fine grinding, and then polishing, prior to subjecting the sample to the dark field analysis.

10. (original) The method of claim 1, wherein performing the dark field analysis includes capturing an image of the cross section of the prepared device sample under dark field illumination.

11. (original) The method of claim 1, further wherein performing the dark field analysis includes using a compound microscope configured for dark field illumination and inspection and wherein the compound microscope includes an image capture system coupled to the compound microscope for capturing an image of the cross section face of the device under inspection.

12. (original) The method of claim 11, wherein the captured image include a digital image.

13. (original) The method of claim 1, wherein the dark field illumination includes use of a full complement of light for illuminating the cross section face of the device under inspection.

14. (canceled)

15. (currently amended) ~~The method of claim 1, further comprising:~~ A method for performing failure analysis on a semiconductor device under inspection, comprising:

preparing of a sample of the semiconductor device under inspection using an encapsulation material containing a dye, the prepared device sample possibly including at least one failure area containing wicked in encapsulation material containing the dye;

sectioning the prepared device sample to facilitate viewing a cross section face of the device under inspection;

performing a dark field analysis on the prepared device sample with the use of dark field illumination, wherein responsive to at least one failure area containing wicked in encapsulation material with dye occurring on the cross section face of the device under inspection, the failure area can be readily identified as well as a contrast and perspective of remaining portions of the cross section face being maintained; and

prior to preparing and sectioning the device sample, performing an initial assessment of the device under inspection with the use of acoustic scanning to determine a location for cross sectioning the device sample, the location corresponding to a potential failure area or point of delamination in the device sample.

16. (currently amended) A method of manufacturing a semiconductor device comprising:

fabricating the semiconductor device;

performing a failure analysis on the semiconductor device, the failure analysis including (a) preparing of a sample of the semiconductor device under inspection using an encapsulation material containing a dye, the prepared device sample possibly

including at least one failure area containing wicked in encapsulation material containing the dye, (b) sectioning the prepared device sample to facilitate viewing a cross section face of the device under inspection, and (c) performing a dark field analysis on the prepared device sample with the use of dark field illumination, wherein responsive to at least one failure area containing wicked in encapsulation material with dye occurring on the cross section face of the device under inspection, the failure area can be readily identified as well as a contrast and perspective of remaining portions of the cross section face being maintained; ~~and~~

adjusting the manufacturing process in response to an outcome of the failure analysis; and

repeating the sectioning of the prepared device sample to facilitate viewing another cross-section face of the device under inspection, and performing dark field analysis on the another cross section face of the prepared device sample with the use of dark field illumination.

17. (original) The method of claim 16, wherein the semiconductor device includes a wafer level chip scale packaged semiconductor device.

18. (original) The method of claim 16, wherein the dye includes at least one fluorescent dye selected from the group consisting of a Xanthane, Naphthalimide, Perylene, Courmarin, and Fluorescein based family.

19. (original) The method of claim 16, wherein the dye includes a dye pigment that is added to an uncured epoxy encapsulation material.

20. (original) The method of claim 19, wherein preparing the device sample further includes placing the sample into a container along with the uncured epoxy containing the dye pigment, placing the same in a vacuum chamber, and maintaining the same under vacuum within the vacuum chamber for a duration of time sufficient for allowing the uncured epoxy encapsulation material containing dye to wick into a failure area of delamination extending from an exterior to an interior of the device sample.

21. (original) The method of claim 16, further wherein performing the dark field analysis includes using a compound microscope configured for dark field illumination and inspection and wherein the compound microscope includes an image capture system coupled to the compound microscope for capturing an image of the cross section face of the device under inspection.

22. (canceled)

23. (original) The method of claim 16, further comprising:

prior to preparing and sectioning the device sample, performing an initial assessment of the device under inspection with the use of acoustic scanning to determine a location for cross sectioning the device sample, the location corresponding to a potential failure area or point of delamination in the device sample.

24-30 (canceled)